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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SODERQUIST, ARLEN

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025,564

Applicant(s)

JANSSON ET AL.

Examiner

Arlen Soderquist

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. For evidence of this applicant is referred to pages 23-25 of the 1997 article of Winkquist et al, cited in the information disclosure statement of March 13, 2002 as reference C2.
2. Claims 1 and 16 are objected to because of the following informalities: in claim 1 "(USA)" should be removed and in claim 16 "/" should be removed. Appropriate correction is required.
3. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 1, 9, and 18 recite the broad recitation "a metal or alloy selected from members of any of the groups 6-12 of the periodic table", and the claims also recite "preferably groups 9-11" which is the narrower statement of the range/limitation. Additionally the metals of the periodic table referred to are not clear for the following reasons. First, it is not clear if groups refers to columns 6-12 or 9-11 (the set or a subset of the transition metals) of the periodic table or another method grouping of metals in the periodic table. Second, with two different groupings, it is not clear if applicant is claiming the larger or smaller group of

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metals. Third, alloys are not found in the periodic table, but are made from elements in the periodic table. In claim 5, the broad recitation of "less than 700 ms" is followed by "preferably less than 100 ms", "preferably less than 50 ms" and "suitably 25 ms or less" which are narrower statements of the limitation. In claim 6 "each period in the pulse train" does not have antecedent basis. Also it is not clear if the period is equivalent to the time of a single pulse or a set of pulses. In claim 8 it is not clear if applicant is refereeing to each of the working electrode and counter electrode of claim 1 or if applicant needs to claim a plurality of working electrodes for the limitation of claim 7. In claim 9 it is not clear if the sensor unit is simply the electrode of the metal or also includes the counter electrode, potentiostat and processing unit. In claim 11 it is not clear how the liquid provides a further limitation to the apparatus since it does not limit the apparatus of claim 9. In claim 14 it is not clear what arrangement of the sensor is required for measurement of blood. In addition there are two types of blood in claim 11 and it is not clear which one is being referred to by "said blood". In claim 16 it is not clear if the claim is limited to a graph or if other things can be used to graphically monitor the measurements.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 4-6, 9-11 and 14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Winqvist (Analytic Chimica Acta 1997, hereinafter referred to as Winqvist'97). In the paper Winqvist'97 teaches an electronic tongue based on voltammetry. Presently, great interest is shown in the concept of an electronic nose. It consists of an array of gas sensors with different selectivity patterns, a signal collecting unit and pattern recognition software applied to a computer. Similar concepts, but for analysis in liquids have also been described, and since they are related to the tasting sense, the term 'electronic tongue' or 'taste sensor' was coined. This paper describes how various voltammetric techniques such as large and small amplitude pulse voltammetry

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(LAPV and SAPV) can generate information when combined with a multivariate analysis method. A prototype of an electronic tongue was designed, based on the combination of voltammetry, using a double working electrode of gold and platinum, and principal component analysis. It is demonstrated how this electronic tongue is able to classify various samples such as fruit juices, still drinks and milk. It was also possible to follow aging processes of milk and orange juice when stored at room temperature.

6. Claims 1, 4-7, 9-11, 14 and 116-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Winqvist (Measurement Science and Technology 1998, hereinafter referred to as Winqvist'98). In the paper Winqvist'98 monitors the freshness of milk by an electronic tongue on the basis of voltammetry. They describe an electronic tongue which consists of a reference electrode, an auxiliary electrode and five wires of different metals (gold, iridium, palladium, platinum and rhodium) as working electrodes. The measurement principle is based on pulsed voltammetry, in which successive voltage pulses of gradually changing amplitudes are applied to the working electrodes connected in a standard three-electrode configuration. The five working electrodes were successively connected and corresponding current-response transients are recorded. The electronic tongue was used to follow the deterioration of the quality of milk due to microbial growth when milk is stored at room temperature. The data obtained were treated with principal component analysis and the deterioration process could clearly be followed in the diagrams. To make models for predictions, projections to latent structure and artificial neural networks were used. When they had been trained, both models could satisfactorily predict the course of bacterial growth in the milk samples.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 2-3, 12-13, 15 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winquist'97 or Winquist'98 as applied to claims 1, and 11 above, and further in view of Bouzid and Locatelli. Winquist'97 and Winquist'98 do not teach the method and apparatus applied to the specifically claimed samples.

In the paper Bouzid teaches flow-injection methods for the determination of 18 and related compounds uracil derivatives with voltammetric detection by means of differential-pulse amperometry (DPA) or differential-pulse cathodic stripping voltammetry (DPCSV). The carrier stream is a borax/KNO₃/HNO₃ (or NaOH) soln. contg. 0.001 vol. % Triton X 100. This surfactant displaces the oxygen redn. peak to such neg. potentials that deaeration is unnecessary for detection of compds. having peak potentials in the range 180-70 mV (vs. Ag/AgCl) at pH 7.6. At the hanging mercury drop electrode, the uracil derivative is deposited from the flowing sample at a fixed potential more positive than the relevant peak potential and stripped under stopped-flow or slow-flow conditions. In the amperometric mode, a constant potential also more positive than the relevant peak potential is applied to the dropping mercury electrode and the resulting peak is measured under flow conditions. Linear calibration graphs were found for most of the compounds at 10⁻⁷-10⁻⁶ M by DPA and about one order of magnitude lower by DPCSV. The limit of detn. for 5-iodouracil was 5 × 10⁻⁹M (~1.2 ng/mL). Separation is needed for applications to blood or urine. Samples deproteination followed by high-performance liquid chromatography with a reversed-phase column proved satisfactory. Separations of various uracil derivatives, and of 5-fluorouracil, uric acid and 5-fluorodeoxyuridine, are described; spectrophotometric and amperometric detectors were used sequentially to check performance.

In the abstract Locatelli teaches the determination of chromium(VI) in dialysis fluids by alternating current and differential pulse voltammetry. A.c. and differential pulse voltammetry are employed for the determination of Cr(VI) in dialysis fluids, using 0.1 mol/L dibasic ammonium citrate as supporting electrolyte (pH 5.9). A 3-electrode cell was used. The working electrode was a long-lasting sessile-drop Hg electrode with a

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drop time of 240-300 s. Precision, expressed as relative standard deviation ($s_r\%$), and accuracy, expressed as relative recovery ($R\%$), are also reported.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the devices of Winquist'97 or Winquist'98 on the samples of Bouzid or Locatelli to obtain the measurement advantages of the Winquist'97 or Winquist'98 pulse sequences and multivariate analysis.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited art relates to tongue type electrode sensors and to pulse voltammetric analysis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose current telephone number is (703) 308-3989. After about December 16, 2003, this number will change to (571) 272-1265 as a result of the examiner moving to the new USPTO location. The examiner's schedule is variable between the hours of about 5:30 AM to about 5:00 PM on Monday through Thursday and alternate Fridays.

For communication by fax to the organization where this application or proceeding is assigned, (703) 305-7719 may be used for official, unofficial or draft papers. When using this number a call to alert the examiner would be appreciated. Numbers for faxing official papers are 703-872-9310 (before finals), 703-872-9311 (after-final), 703-305-7718, 703-305-5408 and 703-305-5433. The above fax numbers will generally allow the papers to be forwarded to the examiner in a timely manner.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



December 11, 2003

ARLEN SODERQUIST
PRIMARY EXAMINER